MAKAROV, B.N.; IGNATOVA, V.P.; KHODAKOVA, R.N.

Decompostion of some organic substances in turf-podzolic soils.
Pochvovedenie no.12:68-73 D '62.   (MIRA 16:2)

1. Pochvennyy institut imeni V.V.Dokuchayeva.
          (Podzol)   (Humus)

MAKAROV, B.

Content of air and aeration of humus-peat soils. Pochvovedenie
no.2:87-92 F '62. (MIRA 15:3)

1. Pochvennyy institut imeni V.V.Dokuchayeva.
(Peat soils)   (Gases in soils)

MAKAROV, B.N.; IGNATOVA, V.P.

Biological activity of some soil types in the Soviet Union (determined by the intensity of CO_2 production). Dokl.AN SSSR 138 no.2:437-439 My '61. (MIRA 14:5)

1. Pochvennyy institut im. V.V.Dokuchayeva Akademii nauk SSSR. Predstavleno akademikom I.V.Tyu.iny..

(Soils—Microbiology) (Carbon dioxide)

MAKAROV, B.N.

Determining the amount of ammonia escaping from soil.
Pochvovedenie no.8:98-99 Ag '60.   (MIRA 13:8)

1. Pochvennyy institut im. V.V.Dokuchayeva Akademii nauk
SSSR.
        (Gases in soils) (Ammonia)

MAKAROV, B.N.

Respiration of soils and the composition of soil air in drained
peat bog soils. Pochvovedenie no.2:56-62 F '60. (MIRA 15:7)

1. Pochvennyy institut imeni V.V. Dokuchayeva AN SSSR.
      (Peat soils)   (Gases in soil)

MAKAROV, B.N.

Determining carbonic acid and oxygen in soil air [with summary
in English]. Pochvovedenie no.1:121-125 Ja '59.

(MIRA 12:2)

1. Pochvennyy institut imeni V.V. Dokuchayeva AN SSSR.
(Gases in soils)

Diurnal and Nocturnal Variations of Soil Respiration and   20-2-53/60
'Carbon Dioxide Content in the Layer of Air Near the Ground

                during the day (8-9 a.m. to about 6 p.m.) with a minimum
                point around noon. After 6 p.m. the CO_2-content in the air
                rapidly increases and during the night amounts to about double
                of the normal content. This stays so until 6 a.m. the latter
                variations may be explained by the course of photosynthesis by
                day and night (reference 4). By day, especially around noon,
                the plants consume large amounts of CO_2, whereas in the evening
                and during the night thea only separate CO_2. There are 2 fig-
                ures, 1 table, and 11 references, 9 of which are Slavic.

ASSOCIATION: Soil-Institute AN USSR imeni V. V. Dokuchayev (Pochvennyy
                institut imeni V. V. Dokuchayeva Akademii nauk SSSR).

PRESENTED: April 18, 1957, by I. V. Tyurin, Academician

SUBMITTED: April 17, 1957

AVAILABLE: Library of Congress

Card 3/3

Diurnal and Nocturnal Variations of Soil Respiration and   20-2-53/60
Carbon Dioxide Content in the Layer of Air Near the Ground.

and dried peat-moor-soils from the Moskva region were in-
vestigated. The former were cultivated with multiannual
grasses, partially lying fallow. The peat soil was cultivated
with the grasses mentioned. The results are given in table 1
and figure 1. These show that during the day (9 a.m. to 3 p.m.)
1,5-2 times more CO_2 is separated by the surface of the soil
than during the morning and the evening. The largest separ-
ation takes place between noon and 3 p.m. In spite of deeper
air and soil-temperatures a large quantity of carbon dioxide
is separated during the night. The curves of the soil-respir-
ation in the course of 24 hours on the whole agree with the
temperature curves. The intensity of soil-respiration is pre-
valently connected with the air- and soil-temperature. The
latter influences the physico-chemical and biological process-
es in the soil as well as the diffusion-velocities of CO_2 from
the soil into the air. In the cultivated parcels these vari-
ations of intensity are also influenced by the biological pro-
cesses in the plants, first of all by the root-respiration.
Figure 2 shows the variations of CO_2-content in the layer of
air near the ground in the course of 24 hours. In both kinds
of soil the CO_2-content is here lowest (about 0,03 volume-%)

Card 2/3

AUTHOR: Makarov, B. N.
                                                              20-2-53/60

TITLE: Diurnal and Nocturnal Variations of Soil Respiration and
               Carbon Dioxide Content in the Layer of Air Near the Ground
               (Izmeneniye d.rkhaniya pochvy i soderzhaniya uglekisloty v
               prizemnom sloye vozdukha v techeniye sutok).

ABSTRACT: Carbon dioxide represents one of the most important con-
               ditions for the production of the organic mass on the earth
               and an important soil-forming factor of the physico-chemical
               and biochemical processes in the soil. The escape of carbon
               dioxide from the soil into the air plays an important part
               in the carbon nutrition of the plants (references 7,8). The
               production and excretion of carbon dioxide from the soil is
               subject to considerable variations in the course of the vege-
               tation period and is dependent on the development of the plants,
               on the temperature and moisture of the soil. The soil respi-
               ration was determined according to the method by Makarov
               (references 5,6): The surface of the ground is therefore iso-
               lated from the surrounding air by a glass-box without a
               bottom. Gas samples are sucked off from the box over an ab-
               sorber. Turf-fuller's earth-soils with a medium clay content

Card 1/3

MAKAROV, B.N.; MATSKEVICH, V.B.

Terms "respiration of soil" and "biological activity of soil".
Pochvovedenie no. 6:114-115 Je '58.   (MIRA 11:7)

1. Pochvennyy institut im. V.V.Dokuchayeva AN SSSR.
            (Soils--Terminology)

MAKAROV, B.N.

Simplified method for determining respiration (and biological
activity) in soil [with summary in English]. Pochvovedenie
no.9:119-122 S '57.   (MIRA 10:12)

1. Pochvennyy institut im. V.V.Dokuchayeva AN SSSR.
                          (Soils--Analysis)

MAKAROV, B.N.; FRENKEL', E.Ya.

Gas exchange between the soil and atmosphere on various turf-Podzolic croplands and effect of deepening the plow layer on this process.
Trudy Pochv.inst.49:152-181 '56.   (MLRA 9:8)
                    (Gases in soils)(Plowing)

PAVLOVSKIY, M.A. [deceased]; MAKAROV, B.N.

Deepening of the plow layer and its effect on hydrophysical proper-
ties of turf-Podzolic soils. Trudy Pochv.inst.49:73-85 '56.
(MLRA 9:8)

(Plowing) (Soil physics)

MAKAROV, B.N., kandidat sel'skokhozyaystvennykh nauk (Moskva)

Soil is the source of the carbon nutrition of plants. Priroda 45
no.2:91-93 F '56. (MLRA 9:5)

1. Pochvennyy institut imeni V V. Dokuchayeva Akademii nauk SSSR.
(Plants--Nutrition) (Carbon)

MAKAROV, B.N.

Soil aeration as a source of carbon nutrition for plants. Trudy Inst. fiziol.rast. 10:156-160 '55. (MLRA 8:9)

1. Pochvennyy institut im. V.V. Dokuchayeva Akademii nauk SSSR. (Plants--Nutrition)

MAKAROV, B.V.

USSR.

8608* Method of Determination of Gas Exchange Between Soil and Atmosphere and of the Content of Carbonic Acid in the Soil Air. K metodike opredeleniia gazoobmena mezhdu pochvoi i atmosferoi i soderzhaniia uglekisloty v pochvennom vozdukhe. (Russian.) B. N. Makarov, *Pochvovedenie*, 1955, no. 2, Feb., p. 85-87.

Includes photographs, table. 8 ref.

MAKAROV, B.N., kandidat sel'skokhozyaystvennykh nauk.

Respiration of the soil.   Priroda 42 no.9:81-84 S '53.   (MLRA 6:9)

1. Pochvennyy institut imeni V.V.Dokuchayeva Akademii nauk SSSR.
                                                    (Soil oxidation)

MAKAROV, B.N.

(i)

Row-fertilising of sugar beet in regions of the northern non-chernozem zone. B. N. Makarov (Pochvovedenie, 1953, No. 4, 37—41).—Fertiliser drilled in the row was more effective than when broadcast although $(NH_4)_2SO_4$ depressed early growth. This adverse effect was lessened by simultaneous application of lime.
SOILS & FERTILISERS (A. G. P.).

MAKAROV, B.N.

Meteorological Abst.
Vol. 4 No. 8
Aug. 1953
Part 1
General Meteorology

4.8--25

551.5:631.4(47)

Makarov, B. N., Dinamika gazoobmena mezhdu pochvoi i atmosferoi v techenie vegetatsionnogo perioda pod razlichnymi kul'turami sevooborota. [Dynamics of gas exchange between soil and atmosphere during the vegetative period of various rotated crops.] Poch-vovedenie, Moscow, 3:271-277, March 1952. fig., 8 tables, 12 refs. DLC--A simple method for the determination of the gas exchange, using a glass box, is described. The development phase of the crop has a great influence on the gas exchange, which increases during the growth; under the plant cover the gas exchange is several times more intensive than on black fallow. Higher temperatures are connected with a greater exchange. A more intensive gas exchange is observed on richer soils. Experimental data are given. Subject Headings: 1. Gas exchange soil-atmosphere 2. Agricultural meteorology 3. U.S.S.R.--A.A.

CA

Variation of photosynthesis and respiration in potato during the vegetation period. B. N. Makaroy. *Doklady Akad. Nauk S.S.S.R.* 77, 503 5(1951). Examination of Lorch potato plants throughout the vegetative cycle under field conditions (glass "house" for photosynthesis study) showed that the variations of photosynthesis and respiration follow exactly the pattern shown by the sugar beet (*C.A.* 44, 10057e). Young plants have some 35% higher photosynthetic and oxidative activity than adult plants, in which the productive photosynthesis is only 0.2 0.3 of the true photosynthesis since most of assimilated CO_2 goes to respiration processes. The max. of CO_2 uptake and evolution is in July.

G. M. Kosolapoff

CA

/ID

Diurnal course of photosynthesis and respiration in sugar beet over its vegetation period. B. N. Makarov. *Doklady Akad. Nauk S.S.S.R.* 72, 185 7(1950). Photosynthesis and respiration show a max. in mid-day hrs. Intensity is high in young plants (June-July), lower in older ones (August-September); max. values correspond to max. leaf development in the plant (July-August).

G. M. Kosolapoff

(A

A method for determination of photosynthesis and respiration in whole plants. L. S. Lyubarskaya and B. N. Makarov (Vsesoyuz. Nauch.-Issledovatel. Inst. Svcklovich. Polevodstva). *Doklady Akad. Nauk S.S.S.R.* **71**, 167-70(1950). Glass "houses" of 180-200 square dm. size are used; these are provided with gas-tight sliding walls with provisions for taking gas samples. H_2O-absorbents are readily placed within the enclosure. Air mixing is done by elastic rubber bulbs inserted through the walls, and gas samples are taken by aspiration. Typical results are given in tabular form for sugar-beet expts.

G. M. Kosolapoff

PLESNER, Abram Iyezokiilovich; MAKAROV, D.M., red.

[Spectral theory of linear operators] Spektral'naia
teoriia lineinykh operatorov. Moskva, Nauka, 1965.
624 p.   (MIRA 18:1)

NIKOL'SKIY, G.V., otv. red.; MAKAROV, B.M., red.

[Theoretical principles of fish culture; reports and resolution of the Conference] Teoreticheskie osnovy rybovodstva; doklady i reshenie Soveshchaniia. Moskva, Nauka, 1965. 244 p.   (MIRA 18:7)

1. Vsesoyuznoye soveshchaniye po teoreticheskim voprosam rybovodstva, Moscow, 1964.

PAVLOVSKIY, Ye.N., akad., glav. red.; ZENKOVICH, B.A., red.;
KLEYNBERG, S.Ye., red.; CHAPSKIY, K.K., red.; MAKAROV,
B.M., red.

[Marine mammals] Morskie mlekopitaiushchie. Moskva, Nauka,
1965. 317 p.   (MIRA 18:5)

1. Akademiya nauk SSSR. Ikhtiologicheskaia kommissiya.
2. Vsesoyuznyy nauchno-issledovatel'skiy institut morskogo
rybnogo khozyaystva i okeanografii (for Zenkovich). 3. Zo-
ologicheskiy institut AN SSSR (for Chapskiy).

KLEYNENBERG Sergey Yevgen'yevich; YABLOKOV, Aleksey Vladimirovich;
BEL'KC. JH, Vsevolod Mikhaylovic ; TARASEVICH, Mariya
Nikolay vna; Prinimali uchastiye: LELYAMURE, S.L.;
ZHEMKOVA, Z.P.; MAKAROV, B.M., red.

[Beluga; a monographic study on the species] Belukha; opyt
monograficheskogo issledovaniia vida. [By] S.E.Kleinenberg i
dr. Moskva, Izd-vo "Nauka," 1964. 455 p.   (MIRA 17:4)

PAVLOVSKIY, Ye.N., akademik, glav. red.; KOZHIN, N.I., prof., red.;
BERDICHEVSKIY, L.S., prof., red.; MAKAROV, B.M.; red.;
UL'YANOVA, O.G., tekhn. red.

[Sturgeons in the bodies of water of the U.S.S.R.] Osetrovoe
khoziaistvo v vodoemakh SSSR. Moskva, Izd-vo AN SSSR, 1963.
206 p.   (MIRA 16:9)

1. Vsesoyuznoye soveshchaniye po voprosam razvitiya osetrovogo
khozyaystva v vodoyemakh SSSR, Moscow, 1961.
                         (Sturgeons)

MARTYSHEV, Feodosiy Georgiyevich, prof.; MAKAROV, B.M., red.; LIPKINA,
T.G., red.izd-va; GRIGORCHUK, L.A., tekhn.red.

[Raising fish in ponds] Prudovoe rybovodstvo. Izd. 2., perer.
i dop. Moskva, Gos. izd-vo "Sovetskaia nauka," 1958. 583 p.
(Fish ponds)   (Fish culture)   (MIRA 12:2)

MAKAROV, B. M.

MARTYSHEV, Feodisiy Georgiyevich, professor; MAKAROV, B.M., redaktor;
GAMZAYEVA, M.S., tekhnicheskiy redaktor

[Breeding fish in worked out peat fields] Razvedenie ryby v torfia-
nykh kar'erakh.   Moskva, Gos.izd-vo "Sovetskaia nauka," 1957.
132 p.   (MLRA 10:9)
        (Fish culture)

STROGANOV, N.S.; KORZHUYEV, P.A., redaktor; MAKAROV, B.M., redaktor;
ASTAF'YEVA, G.A., tekhnicheskiy redaktor.

[Physiological adaptability of fishes to the temperature of
the environment] Fiziologicheskaia prisposobliaemost' ryb k
temperature sredy. Moskva, Izd-vo Akademii nauk SSSR, 1956.
151 p.   (MIRA 9:6)
(Gambusia) (Temperature--Physiological effect) (Acclimatization)

RASS, T.S., redaktor; KANAN('SKIY, A.G., redaktor; KLUMOV, S.K.,
    redaktor; MAKAROV, B.M., redaktor; POLYAKOVA, T.V., tekhnicheskiy
    redaktor.

    [Geographical distribution of fishes and other commercial animals
    of the Okhotsk and Bering Seas] Geograficheskoe rasprostronenie ryb
    i drugikh promyshenykh zhivotnykh Okhotskogo i Beringova morei.
    Moskva, Izd-vo Akademii nauk SSSR. 1955. 115 p. (Akademiia nauk
    SSSR. Institut okeanologii. Trudy, vol.14)   (MLRA 9:2)

    1.Akademiya nauk SSSR Institut okeanologii.
        (Okhotsk, Sea of--Marine fauna) (Bering Sea--Marine fauna)

MAKAROV, B.M.

Inductive limits of normalized spaces. Vest. LGU 20 no.13:50-58 '65.
(MIRA 18:7)

MAKAROV, B.M.

Some pathological properties of the inductive limits of B-spaces.
Usp. mat. nauk 18 no.3:171-178 My-Je '63.   (MIRA 16:10)

MAKAROV, B. M., Cand Phys-Math Sci -- (diss) "Inductive limits of nor-
malized spaces." /Moscow/, 1960. 7 pp; (Moscow State Order and Order of
Labor Red Banner Univ im M. V. Lomonosov); 200 copies; price not given;
bibliography on page 7 (10 entries); (KL, 26-60, 150)

The Problem of Moments in Some Functional Spaces   SOV/20-127-5-5/58

ly independent, be a linear subset of X, where $L_n = L \cap X_n$

is finite-dimensional for every $n = 0,1,2,\ldots$. Then the problem
(1) is solvable for arbitrary $_n$.

The author considers examples of some problems of moments in
concretely given spaces.

The author thanks G.P. Akilov for valuable advices.

There are 5 references, 2 of which are Soviet, 2 French, and
1 Italian.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet imeni A.A. Zhdanova
(Leningrad State University imeni A.A. Zhdanov)

PRESENTED: April 27,1959, by V.I. Smirnov, Academician

SUBMITTED: April 9, 1959

Card 2/2

16(1)

AUTHOR: Makarov, B.M.

SOV/20-127-5-5/58

TITLE: The Problem of Moments in Some Functional Spaces

ABSTRACT: Let the locally convex space X, the sequence of elements $x_n \in X$ and the numerical sequence μ_n be given. The problem of determining a functional $f \in X^r$ so that

(1) $f(x_n) = \mu_n$, $n = 0,1,2,\ldots$,

is denoted as the problem of moments in the space X. Let S_n be the closed unit sphere of the space X_n. The sequence of the spaces X_n is assumed to satisfy the condition (F) , if the set $\lambda_o S_o + \ldots + \lambda_n S_n$ for arbitrary $\lambda_k > 0$ is closed in X_{n+1} .

Theorem : Let X be the inductive limit of the increasing sequence of B-spaces X_n . Let the sequence X_n satisfy the condition (F). Let $L = L \left(\left\{ x_n \right\}_{n=0}^{\infty} \right)$ where the x_n are linear-

Card 1/2

KANTOROVICH, Leonid Vital'yevich; AKILOV, Gleb Pavlovich; MAKAROV,
    B.M., red.; POL'SKAYA, R.G., tekhn.red.

[Functional analysis in normed spaces] Funktsional'nyi analiz
v normirovannykh prostranstvakh. Moskva, Gos.izd-vo fiziko-
matem.lit-ry, 1959. 684 p.   (MIRA 12:9)
                        (Functional analysis)

On the Inductive Limit of Normed Spaces   20-119-6-9/56

Let the inductive and projective limits of the reflexive
normed spaces be denoted as (J) - and (P) - spaces. In this
case the two conditions (F_1) and (F_2) are satisfied.

8 theorems are formulated without proof, e.g.:
Theorem: Let E be the inductive limit of the sequence of
normed spaces E_n and let (F_1) or (F_2) be satisfied. Every set
bounded in E is contained in an E_n and there it is bounded.

Theorem: Let F be a space of the class (P) and M be a closed
subspace of F. The factor space F/M belongs again to the
class (P).

Theorem: The spaces of the classes (J) and (P) are reflexive
and their strongly conjugate spaces belong to the classes (P)
and (J).

There are 7 references, 1 of which is Soviet, 1 Czecho-Slovak-
ian, 1 Spanish, 1 Brazilian, and 3 are French.

PRESENTED: December 23, 1957, by V.I.Smirnov, Academician
SUBMITTED: December 9, 1957

Card 2/2

AUTHOR: Makarov, B.M.

TITLE: On the Inductive Limits of Normed Spaces (Ob induktivnykh predelakh normirovannykh prostranstv)

ABSTRACT: The results obtained by Sebastião e Silva [Ref 1] and Raykov [Ref 2] are transferred to the inductive and projective limits of reflexive normed spaces.

Let E_n be the inductive limit of the spaces E_n and let a sequence exist of absolutely convex closed neighborhoods V_n of the zero with the property that for certain $\lambda_n > 0$ it is

$\lambda_n V_n \subset V_{n+1}$, n=1,2,... It is said that the sequence of the E_n satisfies the condition (F_1), if all V_n are closed in E and if V_1 contains no linear subsets of E which are different from zero. It is said that the sequence of the E_n satisfies the condition (F_2), if each absolutely convex closed zero neighborhood W_n in E_n which is contained in V_n, is closed in E_{n+1}.

Card 1/2

MAKAROV, B.M.

Topological equivalence of B-spaces. Dokl.AN SSSR 107 no.1:
17-18 Mr '56.
(MIRA 9:7)

1.Leningradskiy gosudarstvennyy universitet imeni A.A.Zhdanova.
Predstavleno akademikom V.I.Smirnovym.
(Topology)

ACCESSION NR: AP4019005

Vibrator	Natural Frequency in Air, cps.	Actual Natural Frequency, cps.	Damping
VIII	1200	350—365	0,87—0,92
V	2000	1230—1240	0,71—0,73
IV	3000	730—830	0,80—0,82
II	10000	4900—5900	0,95—1,00
I	5000	1700—2300	0,69—0,95

Orig. art. has: 4 figures, 2 formulas, and 1 table.

ASSOCIATION: Ry*binskiy vecherniy tekhnologicheskiy institut (Ry*binsk Evening Technological Institute)

SUBMITTED: 01Jun63

DATE ACQ: 23Mar64

ENCL: 00

SUB CODE: EE

NO REF SOV: 001

OTHER: 000

Card 2/2

ACCESSION NR: AP4019005   S/0146/64/007/001/0152/0156

AUTHOR: Makarov, B. I.; Kornilov, V. V.

TITLE: Simple method for determining actual natural frequency and damping of vibrators of an electromechanical oscillograph

SOURCE: IVUZ. Priborostroyeniye, v. 7, no. 1, 1964, 152-156

TOPIC TAGS: oscillograph, electromagnetic oscillograph, vibrator type oscillograph, oscillograph vibrator frequency, oscillograph vibrator damping, MOV-2 oscillograph

ABSTRACT: On the nameplates of electromagnetic-oscillograph vibrators, their natural frequency of oscillations in air is indicated. The actual natural frequency — much lower than on the nameplate — can be determined from the response of a vibrator to the application of a unit step input. An oscillogram of that response shows the natural frequency and damping involved. Five vibrators of a Soviet-made MOV-2 oscillograph were investigated with these results:

Card 1/2

L 21324-65

ACCESSION NR: AP5002029

2

$$\times \exp[-2Fo\,(Bi-Bi_0)]\int_0^{z\sqrt{\frac{Fo}{i_0}}}\left\{\int_0^{\cdot}\exp\left\{v^2\left[\frac{2h_k}{z^2}(Bi-Bi_0)-1\right]\right\}dv\times\right.$$

$$\times\frac{L}{z}\,J_1(z)J_1(h_1z)\,dz-i_{K_3}\sqrt{\bar{z}}\,h_k\sqrt{b}\sum_{i}^{\cdot}\frac{1}{z}J_1(z)J_k(h_1z)\times$$

$$\times\left[1-\mathrm{erf}\left(z\sqrt{\frac{Fo}{i_0}}\right)\right]dz,$$

where $Fo=a_k\tau/R_3^2$, $Bi=\alpha R_3/\lambda_3$, $Bi_0=f_0 R_3/\lambda_3$, $h_1=xVR_3$, $h_2=r/R_3$, $h_k=\lambda_3/\lambda_T$ and j, a_3, i_T, $i_r=a_T/a_T$.

are the coefficients of thermal diffusivity of the electrode and solid respectively. Orig. art. has: 34 equations

ASSOCIATION: Aviatsionnyy tekhnologicheskiy institut g. Rybinsk (Rybinsk Institute of Aviation Technology)

SUBMITTED: 02Jan64

SUB CODE: TD

NO REF SOV: 002

ENCL: 00

OTHER: 000

Card 4/4

L 21324-65

ACCESSION NR: AP5002029

$$k_\lambda\Big|_{\substack{t=0\\t\to k_a}} = -\frac{2\sqrt{2}\,k_\lambda}{\pi\sqrt{BI}\,F_0}\int_0^\infty\int_0^{\sqrt{BIF_0}}\left[\int_0^{\sqrt{\frac{F_0}{k_a}\left(1-\frac{u^2}{2BIF_0}\right)}}\right]t'\left[\tau\left(1-\frac{u^2}{2BIF_0}\right)-\right.$$

$$\left. -\frac{Ak_a}{z^2F_0}\right)\right]\exp(-u^2)\,du\Big]\,[\exp(-u^2)+\sqrt{\pi}\,u\,\mathrm{erf}\,u]\,du\Big\}\frac{1}{z}\,J_1(z)\,J_0(k_\lambda z)\,dz-$$

$$-i\kappa_a\frac{4\sqrt{2}\,k_\lambda\,(BI-BI_0)}{\pi\sqrt{BI}}\times$$

$$\times\exp[-2F_0(BI-BI_0)]\int_0^\infty\int_0^{\sqrt{2BIF_0}}\left[\int_0^{\sqrt{\frac{F_0}{k_a}\left(1-\frac{u^2}{2BIF_0}\right)}}\right]\exp\left\{v^2\left[\frac{2k_a}{z^2}\times\right.\right.$$

$$\times(BI-BI_0)-1\right]\Big]\,dv\Big]\,[\exp(-u^2)+\sqrt{\pi}\,u\,\mathrm{erf}\,u]\exp\left[u^2\left(1-\frac{BI_0}{BI}\right)\right]du\Big\}\times$$

$$\times\frac{1}{z}\,J_1(z)\,J_0(k_\lambda z)\,dz-i\kappa_a\frac{2\sqrt{2}\sqrt{BI_0}}{\sqrt{\pi}}\,k_\lambda\times$$

Card 3/4

L 21324-65
ACCESSION NR: AP5002029

$$t_k = t_{k_0} \exp(-x\sqrt{m_2}), \quad x > 0,$$

$$t_k = -\frac{q_k R_3}{\lambda_1} \int_0^\infty \frac{1}{\gamma} \exp(-\gamma|x|) J_1(\gamma R_3) J_0(\gamma r) d\gamma, \quad x < 0,$$

where $m_2 = \frac{2\alpha_0}{\lambda_1 R_3}$, $q_k = \lambda_2 t_{k_0} \sqrt{m_2}$, R_3 is the electrode radius, t_{k_0} is the steady-state temperature at the contact area; λ_1, λ_2 are the thermal conductivity coefficients of the electrode and solid respectively, and α_0 is the initial heat transfer coefficient of the electrode surface. The solid is heated or cooled so that the contact area temperature varies as $t_k = t_{k_0} + f(t)$, where f is positive or negative with heating or cooling respectively and $f(0) = 0$. An expression is derived for the distorted temperature in the solid, from which the error in the temperature measurement is determined by evaluating the obtained expression at the contact area:

Card 2/4

L 21324-65 EWT(l)/EWT(m)/EPF(c)/EPF(n)-2/EWA(d)/T/ Pz-4/Pi-4/Pu-4 AFWL/
SSD/AEDC(b)/SSD(a)-5/ASD(f)-5/AS(mp)-2/AFMDC/RAEM(c)/IJP(c) RWE/WW

ACCESSION NR: AP5002129 S/0170/64/000/012/0060/0065

AUTHOR: Makarov, B.

TITLE: Error in measuring the temperature on a solid surface using a thermo-
couple with heating or cooling according to an arbitrary law

SOURCE: Inzhenerno-fizicheskiy zhurnal, no. 12, 1964, 60-65

TOPIC TAGS: temperature measurement, thermocouple, error measurement

ABSTRACT: The error in measuring the temperature on the surface of a semi-
infinite solid using a semi-artificial thermocouple is determined. The error is
caused by heat flow along the thermocouple electrode which distorts the tempera-
ture field in the solid. It is assumed that the electrode is semi-infinite, the
heat transfer coefficient α on the electrode surface is constant and the same
for the whole surface, there is no transverse temperature gradient in the elec-
trode, the solid surface is insulated, and the temperature of the surrounding
medium equals zero. The steady-state temperature field at the initial moment of
time ($r = 0$) of the electrode and solid are given respectively by

Card 1/4

KORNILOV, V.V.; MAKAROV, B.I.

Measurement of quick-changing temperatures in conducting solids
with thermocouples. Izm. tekh. no.10:35-37 O '63. (MIRA 16:12)

CHERKASSKIY, A.Kh., kand.tekhn.nauk; MAKAROV, B.G., inzh.

VIESKH-IPAN thermoelectric installation. Nauch. trudy VIESKH 6:
197-211 '59.   (MIRA 13:12)
            (Thermoelectric apparatus and appliances)

MAKAROV, B.G.

Experimental models of semiconductor thermoelectric generators.
Sbor. nauch.-tekh. inform. po elek. sel'khoz. no.6:24-27 '59.
(MIRA 13:9)

(Electric generators)

MAKAROV, B.G., inzh.

Parallel operation of steam-engine driven electric power plants
with local power system. Nauch. trudy VIESKH 4:257-283 '59.
(MIRA 13:11)

(Electric power plants)

ACCESSION NR: AP4022338

with aftereffects of craniocerebral trauma and neuroinfection with or
without epileptiform seizures do not undergo significant changes. The
glutamin level of cerebrospinal fluid in epileptic patients is $1\frac{1}{2}$ to
2 times higher than in patients with aftereffects of craniocerebral
trauma or neuroinfection without seizures. The difference in blood
glutamin levels of patients with frequent narcolepsy attacks and
patients with epileptic seizures is related to the differences in the
basic pathophysiological mechanisms of these diseases. Glutamin
levels of the blood and the cerebrospinal fluid may be of diagnostic
value in epilepsy and narcolepsy. Orig. art. has: 1 table.

ASSOCIATION: Nervnoe otdeleniye i biokhimicheskaya laboratoriya
Leningradskogo nauchno-issledovatel'skogo instituta ekspertizy
trudosposobnosti i organizatsii truda invalidov (Nervous Disease
Department and Biochemical Laboratory of the Leningrad Scientific-
Research Institute of Working Skills and Invalid Labor Organization)

SUBMITTED: 24Apr63   DATE ACQ: 19Feb64   ENCL: 00

SUB CODE: LS   NR REF SOV: 008   OTHER: 004

Card 2/2

AUTHOR: Makarov, A. Yu.

TITLE: Glutamin levels of blood and cerebrospinal fluid during epilepsy

SOURCE: Voprosy* meditsinskoy khimii, v. 10, no. 1, 1964, 53-58

TOPIC TAGS: glutamin level, blood glutamin level, cerebrospinal fluid glutamin level, epilepsy, narcolepsy, craniocerebral trauma aftereffect, neuroinfection, epileptiform seizure

ABSTRACT: Glutamin levels of blood and cerebrospinal fluid were investigated in a control group and in 174 patients with: grand mal epilepsy, petit mal epilepsy, aftereffects of craniocerebral trauma and neuroinfection with eleptiform seizures and without seizures, frequent attachs of narcolepsy and cataplexy, and infrequent nontypical narcolepsy attacks. Glutamin levels of blood and cerebrospinal fluid were determined by a method developed by P. Boulanger and R. Osteux (1949). Results show that the blood glutamin level of epileptic patients is related to frequency and duration of seizures and severity of disease. Blood glutamin levels of patients

Card 1/2

USHAKOVA, T.D.; MAKAROV, A.Yu.

Proteins, lipoproteins and glycoproteins in the cerebro-
spinal fluid of patients with hydrocephalus. Vop. med. khim. 9
no.2:172-177 Mr-Ap '63.   (MIRA 17:8)

1. Nervnoye otdeleniye i biokhimicheskaya laboratoriya
Leningradskogo instituta ekspertizy trudosposobnosti i
organizatsii truda invalidov i Leningradskiy psikhonevrolo-
gicheskiy institut imeni Bekhtereva.

MAKAROV, A. Yu.

Lipoproteins in the cerebrospinal fluid and blood serum in tumors and
chronic inflammatory diseases of the nervous system; from paper
electrophoresis data. Zhur. nevr. i psikh. 62 no.4:537-543 '62.
(MIRA 15:5)

1. Nervnoye otdeleniye (zav. - kand.med.nauk P.A.Makkaveyskiy) i
biokhimicheskaya laboratoriya (zav. - doktor med.nauk Ye.A.Sel'kov)
Leningradskogo nauchno-issledovatel'skogo instituta ekspertizy
trudosposobnosti i organizatsii truda invalidov.
(LIPOPROTEINS)   (NERVOUS SYSTEM--DISEASES)
(PAPER ELECTROPHORESIS)

MAKAROV, A.Yu.

Paper electrophoresis of cerebrospinal fluid and blood serum
proteins in neoplastic diseases of the nervous system. Zhur.
nerv. psikh. 60 no. 4:409-416 '60.   (MIRA 14:4)

1. Nervnoye otdeleniye (zav. - kand.med.nauk P.A. Makkaveyskiy)
i biokhimicheskaya laboratoriya (zav. - kand.med.nauk Ye.A. Sel'kov)
Leningradskogo nauchno-issledovatel'skogo instituta ekspertizy
trudosposobnosti i organizatsii truda invalidov.
                (CEREBRO SPINAL FLUID)   (BLOOD PROTEINS)
                        (NERVOUS SYSTEM—TUMORS)

MAKAROV, A.Yu.

Paper electrophoresis of the proteins, lipoproteins, and glyco-
proteins of the spinal fluid. Kaz.med.zhur. 41 no.1:59-64 Ja-
F '60.   (MIRA 13:6)

1. Iz nervnogo otdeleniya (zav. - kand.med.nauk P.A. Makkavey-
skiy) i biokhimicheskoy laboratorii (zav. - doktor med.nauk
Ye.A. Sel'kov) Leningradskogo nauchno-issledovatel'skogo insti-
tuta ekspertizy trudosposobnosti i organizatsii truda invalidov.
  (PAPER ELECTROPHORESIS) (CEREBROSPINAL FLUID) (PROTEINS)

MAKAROV, A.Iü

Glycoproteins in the cerebrospinal fluid and blood serum in diseases
of the nervous system. Vop. med. khim. 6 no. 6:573-578 N-D '60.
(MIRA 14:4)

1. Neurological Department and Biochemical Division, Leningrad
Research Institute for Evaluation of Working Ability and
Rehabilitation of Invalids.
(GLYCOPROTEINS) (CEREBROSPINAL FLUID) (SERUM)
(BRAIN—DISEASES)

MAKAROV, A.Yu.

Method for the paper electrophoresis of proteins, lipoproteins, and glycoproteins of the cerebrospinal fluid. Lab delo 6 no.6:39-44 N-D '60.   (MIRA 13:11)

1. Nervnoye otdeleniye (zav. P.A.Makkaveyskiy) i biokhimicheskaya laboratoriya (zav. Ye.A.Sel'kov) Leningradskogo nauchno-issledovatel'- skogo instituta ekspertizy trudosposobnosti i organizatsii truda invalidov.
        (PAPER ELECTROPHORESIS)
        (PROTEINS)
        (CEREBROSPINAL FLUID)

MAKAROV, A. Yu., Cand Med Sci, "Investigations by the method of electrophoresis on protein paper, lipo- and glucoproteins of cerebrospinal fluid and blood serum and their differentially diagnostic significance in tumoral and chronic inflammatory diseases of the nervous system." Leningrad, 1960. (Min of Health RSFSR, Leningrad Sanitary-Hygienic Med Inst). (KL, 3-61, 233).

435

MAKAROV, A.Yu.

Protein fractions of normal and heated serum from patients with tumors
and inflammatory diseases of the nervous system. Vop.med.khim. 5 no.5:
367-372 S-O '59.   (MIRA 13:2)

1. Biochemical Laboratory and Neurological Department, Research Insti-
tute of Labour Capacity Testing and Organization of Labour of Dis-
abled People, Leningrad.
          (BLOOD PROTEINS)
          (NERVOUS SYSTEM   dis.)
          (NERVOUS SYSTEM   neopl.)

MAKAROV, A.Yu., vrach

Significance of paper electrophoresis of the proteins, lipopro-
teins, and glycoproteins of the cerebrospinal fluid and blood
serum in the diagnosis of tumorous and chronic inflammatory
diseases of the nervous system. Trudy LIETIN 2:238-249 '59.
(MIRA 13:7)

(BLOOD PROTEINS) (CEREBROSPINAL FLUID)
(PAPER ELECTROPHORESIS) (CANCER)
(NERVOUS SYSTEM--DISEASES)

MAKAROV, A. Yu.

Clinical use in neurological diseases of a new nervous system
stimulant phenatine. [with summary in French]. Zhur.nevr. i psiKh.
58 no.2:202-203 '58. (MIRA 11:5)

1. Kafedra nervnykh bolezney (zav.- prof. I.Ya. Razdol'skiy)
Leningradskogo sanitarno-gigiyenicheskogo meditsinskogo instituta.
(NICOTINIC ACID, rel. cpds.
B-phenylisopropylamine nicotinic acid, ther. of NS dis.
(Rus))
(AMPHETEMINE, rel.cpds.
same)
(NERVOUS SYSTEM, diseases,
ther., B-phenylisopropylamine nicotinic acid (Rus))

MAKAROV, A.Yu.

Acute serous meningitis observed in the autumn of 1955 in Leningrad.
Vop. psikh i nevr. no.3:58-65 '58.   (MIRA 12:3)

1. Iz kliniki nervnykh bolezney Leningradskogo sanitarno-gigiyeniche
meditsinskogo instituta.
        (LENINGRAD--MENINGITIS)

LOGVINENKO, P.I., kand.med.nauk; LASTOCHKIN, B.I.; MAKAROV, A.Ye.

Pulmonary resection in tuberculomas. Probl.tub. no.6:58-61
'61.
         (TUBERCULOSIS)   (LUNGS---SURGERY)
(MIRA 14:9)

MAKAROV, Andrey Yakovlevich; BICHEROVA, A., red.

[Finishing operations in large-block, large-panel, and brick construction] Otdelochnye raboty v krupnobloch-nom, krupnopanel'nom i kirpichnom stroitel'stve. Tashkent, Uzbekistan, 1965. 30 p.   (MIRA 18:12)

MAKAROV, A.Ya.; KOPELYANSKIY, G.D., kand.tekhn. nauk, retsenzent;
GORNYKH, V.F., inzh., red.; MATYASH, B.F., inzh., red.;
YAKSHAROV, Yu.S., inzh., red.; MIKHAYEV, N.I., red.

[Reference manual on building materials] Spravochnik po
stroitel'nym materialam. Kuibyshev, Kuibyshevskoe knizhnoe
izd-vo, 1963. 647 p.   (MIRA 17:7)

LOMAKIN, V.P., kand. tekhn. nauk; KAMINSKAYA, D.A., kand. tekhn. nauk;
MAKAROV, A.V., inzh.

Study of the dynamics of the electric drive of the steering
of the ESh-8/60 excavator. Stroi. i dor. mash. 10 no.6:
7-9 Je '65.   (MIRA 18:8)

LOMAKIN, V.P., kand. tekhn. nauk; KAMINSKAYA, D.A., kand. tekhn. nauk;
MAKAROV, A.V., inzh.; LYUBCHENKO, L.P., inzh.

Analytic investigation of dynamic characteristics of the
drive of excavator turn gear. Izv. vys. ucheb. zav.; mashinostr.
no.9:113-118 '65.   (MIRA 18:11)

YERMACHENKOV, N.N., veterinarnyy vrach; MAKAROV, A.V., veterinarnyy vrach;
RABINOVICH, A.V., veterinarnyy vrach

Therapy of the malignant catarrhal fever of cattle.
Veterinariia 41 no.7:35 36 Jl '64. (MIRA 18:11)

1. Novgorodskiy zootekhnichesko-veterinarnyy tekhnikum (for
Yermachenkov). 2. Kolkhoz "Voskhod" Kirovskoy oblasti (for
Makarov). 3. Sovkhoz "Nivenskiy" Kaliningradskoy oblasti
(for Rabinovich).

TROFIMOVA, Z.A.; MAKAROV, A.V.

Diagnosis of polyps of the large intestine in children. Vest.
rent. i rad. 40 no.6:46-51 N-D '65.   (MIRA 19:1)

1. Kafedra rentgeno-radiologii (zav. - dotsent Z.A. Trofimova)
Astrakhanskogo meditsinskogo instituta.

PANCHENKOV, G.M.; KUZNETSOV, ...; MALAGEV, ...

Possibility of ....
method using 6
'65.   (MIRA 18:10)

1. Moskovskiy gosudarstvennyy universitet. Submitted March 1, 1965.

KUZNETSOVA, Ye.M.; MAKAROV, A.V.; PANCHENKOV, G.M.; PARBUZIN, V.S.

Estimation of the once-through isotope separation coefficient from data on the equilibrium operation of a column with a draw-off pan. Zhur. fiz.khim. 37 no.10:2349-2350 O '63.   (MIRA 17:2)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova, khimicheskiy fakul'tet.

MAKAROV, A.V.; PANCHENKOV, G.M.

Kinetics of desorption of boron trifluoride from some of its
complex compounds. Vest.Mosk. un. Ser.2: Khim. 18 no.4:46-49
Jl-Ag '63.   (MIRA 16:9)

1. Kafedra fizicheskoy khimii Moskovskogo universiteta.
    (Boron fluoride) (Boron compounds) (Desorption)

LUK'YANOV, V.B.; MAKAROV, A.V.; FEDIN, A.D.

Mathematical statistics in the control of radiometric apparatus.
Zav.lab. 29 no.7:844-849 '63. (MIRA 16:8)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
(Radiometry) (Mathematical statistics)

BEREZHNOY, A.I.; BRODSKIY, Yu.A.; BRONSHTEYN, Z.I.; VEYNBERG, K.L.;
GALDINA, N.M.; GLETMAN, B.A.; GINZBURG, D.B.; GUTOP, V.G.;
GUREVICH, L.R.; DAUVAL'TER, A.N.; YEGOROVA, L.S.; KOTYA.,
A.Ye.; KUZYAK, V.A.; MAKAROV, A.V.; TOLIYAK, V.V.; POPOVA,
E.M.; PRYANISHNIKOV, V.P.; SENTYURIN, G.G.; SIL'VESTROVICH,
S.I., kand. tekhn. nauk, dots.; SOLOMIN, N.V.; TEMKIN, B.S.;
TYKACHINSKIY, I.D.; SHIGAYEVA, V.F.; SHLAIN, I.B.; EL'KIND,
G.A.[deceased]; KITAYGORODSKIY, I.I., zasl. deyatel' nauki i
tekhniki RSFSR, doktor tekhn. nauk, prof., red.; GOROZOVA,
N.A., rea.izd-va; KOMAROVSKAYA, L.A., tekhn. red.

[Handbook on glass manufacture] Spravochnik po proizvodstvu
stekla. [By] A.I.Berezhnoi i dr. Pod red. I.I.Kitaigorodskogo
i S.I.Sil'vestrovicha. Moskva, Gosstroiizdat. Vol.2. 1963.
815 p.   (MIRA 16:12)
                    (Glass manufacture)

MAKAROV, A.V.; PANCHENKOV, G.M.

Cascade apparatus for the separation of boron isotopes by chemical
exchange with the use of a thermal method of phase conversion.
Vest.Mosk.un.Ser.2:Khim. 18 no.2:58-60 Mr-Ap '63.   (MIRA 16:5)

1. Kafedra fizicheskoy khimii Moskovskogo universiteta.
                              (Boron isotopes)

L 17090-63

ACCESSION NR: AP3004692

value in the understanding of phenomena related to the separation of boron
isotopes. Orig. art. has: 2 charts and 1 table.

ASSOCIATION: Moskovskiy universitet, Kafedra fizicheskoy khimii (Moscow
University, Department of Physical Chemistry)

SUBMITTED: 20Jan62   DATE ACQ: 06Sep63   ENCL: 00

SUB CODE: CH   NO REF SOV: 004   OTHER: 000

Card 2/2

L 17000-63   EPR/EWP(j)/EPF(e)/EWP(q)/EMT(m)/BDS   AFFTC/ASD/ESD-3
Pe-4/Pc-4/Pr-4   BM/WW/JD/JW/JG
ACCESSION NR: AP3004692   S/0189/63/000/004/0046/0049

                                                                    82
                                                                    81

AUTHORS: Makarov, A. V.; Panchenkov, G. M.

TITLE: Desorption kinetics of borontrifluoride from some of its complex compounds

SOURCE: Moscow, Universitet. Vestnik. Seriya II. Khimiya, No. 4, 1963, 46-49

TOPIC TAGS: boron fluoride, desorption, kinetics of desorption, complexes, anisole, phenetole, chlorex

ABSTRACT: The desorption kinetics at various temperatures of borontrifluoride from its complexes with anisole, phenetole, chlorex, and sulfuric acid were investigated. Experiments were conducted in apparatus designed by A. V. Makarov and G. M. Panchenkov (ZhFKh, 34, 639, 1960), in which the volume of evolved BF_3 is estimated by means of a gasometer. Fifty-three kinetic curves of the evolved gas for 10 to 60-minute intervals were plotted, with temperatures ranging from 34 to 116.5C for the anisole, from 28.9 to 146.8C for the phenetole, from 31.6 to 96.3C for the chlorex, and from 68.2 to 96.2C for the sulfuric acid complex. The results show that the desorption of BF_3 from its complexes proceeds at a comparatively slow rate for temperatures of 50-100C, the desorption from the sulfuric acid complex being the slowest. The findings are expected to be of

Card 1/2

PANCHENKOV, G.M.; MAKAROV, A.V.; D'YACHENKO, V.Ya.; MOISEYEV, V.D.

Thermal diffusion of BF_3 under pressure. Vest. Mosk. un. Ser. 2:
Khim. 18 no.3:33-36 My-Je '63.   (MIRA 16:6)

1. Kafedra fizicheskoy khimii Moskovskogo universiteta.
        (Boron fluorides)   (Boron isotopes)

On the cascade apparatus for boron isotope S/189/63/000/002/009/010
                                                    A057/A126

coolers, manometer, etc. The BF_3 gas was prepared from NH_4BF_4, B_2O_3 and H_2SO_4
and passed through anisole to the saturation point with BF_3. The BF_3 complex is
then passed by means of the electromagnetic doser to the first column of the
cascade, then evaporated in the first evaporator ($200°C$); the evaporated BF_3
and anisole are condensed and thus the newly formed complex is passed to the top
of the second packed column. This was repeated until the complex passed the
fifth packed column, from where it entered the electromagnetic separator, where
the thermal decomposition of the complex to BF_3 and anisole was effected on the
desorber. By changing the duration of electric pulses and the pulse intervals,
the separation degree of the complex flows was regulated. The final decomposi-
tion of the complex was attained in the second ($150°C$) desorber. Periodic sam-
pling is carried out during the operation of the apparatus for isotope analysis.
There is 1 figure.

ASSOCIATION: Kafedra fizicheskoy khimii (Department of Physical Chemistry)

SUBMITTED: April 6, 1962

Card 2/2

S/189/63/000/002/009/010
A057/A126

AUTHORS: Makarov, A.V., Panchenkov, G.M.

TITLE: On the cascade apparatus for boron isotope separation by the method
               of chemical exchange, using the thermic method for phase transfor-
               mation

PERIODICAL: Vestnik Moskovskogo universiteta, Seriya II, Khimiya, no. 2, 1963,
               58 - 60

TEXT: The construction of a two-stage cascade apparatus with six packed
columns for the separation of boron isotopes by chemical exchange is described.
The fractionating is carried out between gaseous BF_3 and the liquid BF_3 complex
with anisole. The apparatus might be used also for other BF_3 complexes or for
separation of isotopes of other elements. It contains principally 3 reservoirs
for the $BF_3 \cdot C_6H_5OCH_3$ complex, one flask for pumping over the complex, an
electromagnetic regulator of the flow velocity, six packed columns (length about
2.5 m, diameter 15 and 9 mm, total length of package 15.8 m) two distillation
columns, one electromagnetic flow-separator, two desorbers, six evaporators,

Card 1/2

Kinetics of the absorption ...   S/189/63/000/001/002/008
                                        D204/D307

found that at $20^{\circ}C$ the absorption process was rapid, although not
instantaneous, and obeyed the empirical relation ,

$$) \quad \frac{t}{\Delta m} = a + bt.$$

In the authors' apparatus $\Delta m = 2.05 \times 10^{-4} \Delta p$ g/mm Hg, where $\Delta p =$
$p(t) - p_0$. There are 3 figures.

ASSOCIATION: Kafedra fizicheskoy khimii (Physical Chemistry De-
             partment)

SUBMITTED: November 27, 1961

Card 2/2

AUTHORS: Panchenkov, G. M., Makarov, A. V. and Rozynov, B. V.

TITLE: Kinetics of the absorption of BF_3 during the formation of the anisole complex

PERIODICAL: Moscow. Universitet. Vestnik. Seriya II. Khimiya, no. 1, 1963, 7-9

TEXT: The absorption of pure BF_3 (obtained by the decomposition of phenyl diazonium borofluoride) in the anisole. BF_3 complex unsaturated w.r.t. BF_3 was studied, in view of the interest of this problem in the separation of various isotopes of B. Pyrex apparatus was used throughout. The complex was maintained at $20^{\circ}C$ and the initial pressure (p_0) was measured. Additional BF_3 was then passed in, to give a pressure p, and this pressure was measured as a function of time t, i.e. p(t). The experiment was regarded as finished when p(t) remained practically constant with time. It was

Card 1/2

Preparation of boron ...

S/189/63/000/001/001/008
D204/D307

continuously by the decomposition of $C_6H_5N_2BF_4$ (into C_6H_5F, N_2 and BF_3) in pyrex apparatus, under reduced pressure, with gentle heating. The C_6H_5 was removed by passing through cold traps (acetone/solid CO_2), and BF_3 was collected in a trap cooled with liquid N_2. The gas may, if necessary, be further purified, e.g. by rectification or thermal diffusion. There are 2 figures.

ASSOCIATION: Kafedra fizicheskoy khimii (Physical Chemistry Department)

SUBMITTED: February 8, 1961

Card 2/2

S/189/63/000/001/001/008
D204/D307

AUTHORS: Panchenkov, G. M. and Makarov, A. V.

TITLE: Preparation of boron trifluoride

PERIODICAL: Moscow. Universitet. Vestnik. Seriya II Khimiya, no. 1,
              3-6 - \4b\)

TEXT: The present work was motivated by the difficulty in producing
large quantities of pure BF_3. Considerable quantities of BF_3 con-
taining $\sim 1\%$ SiF_4 may be obtained by gradually adding oleum to inti-
mately mixed NH_4BF_4 and B_2O_3. The initial 20 - 30% of BF_3 are evol-
ved in the cold; further evolution requires heating. Pyrex glass is
used. The BF_3 passes through a water-cooled reflux condenser, 2
traps cooled with solid CO_2 acetone, and is purified by freezing
with liquid N_2. The apparatus may yield ~ 200 1 of BF_3 per day. Les-
ser quantities of BF_3 of higher purity ($< 0.1\%$ SiF_4) may be obtained

Card 1/2

33695

S/076/62/036/002/007/009
B152/B110

Zone mel ing separation...

analysis indicated an accumulation of B^{11} in the melt:

$$^{10}B^{11}BO_{3\,liq} + {}^{11}B_2O_{3\,sol} \rightleftharpoons {}^{11}B_2O_{3\,liq} + {}^{10}B^{11}BO_{3\,sol}$$. The distribution
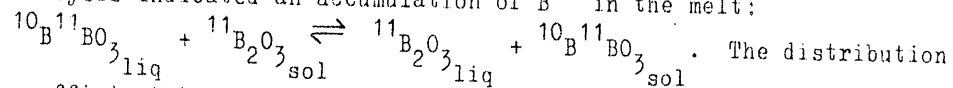
coefficient is, however, very small. Therefore, zone melting is not suitable for the concentration of boron isotopes. A. M. Kolchin, Z. F. Kolchina, and V. F. Malakhov are thanked for analyses. There are 1 figure, 1 table, and 8 references: 2 Soviet and 6 non-Soviet. The four references to English-language publications read as follows: J. C. Posey, H. A. Smith, J. Amer. Chem.Soc. 79, 555 (1957); H. A. Smith, C. O. Thomas, J. Phys. Chem., 63, 445 (1959); R. E. Weston, Geochim. et cosmochim. acta, 8, 281, 1955; Japanese Patent 768 ('58), February 12, 1958, C. A. 1959, no. 9, 7820d.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
               (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: May 20, 1961

Card 2/2

33695

S/076/62/036/002/007/009
B152/B110

5.2410

AUTHORS: Makarov, A. V., Koretskaya, T. V., and Panchenkov, G. M.

TITLE: Zone melting separation of boron isotopes

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 2, 1962, 391 - 393

TEXT: In this study, the suitability of zone melting for the separation
of boron isotopes has been tested. Boron anhydride B_2O_3 was used for the
purpose. The boron anhydride was filled into a stainless steel tube in
such quantity that in the molten state about half the tube was full.
During the experiment the tube moved at a certain velocity through a
furnace heated to 700 - 800°C. In order to obtain a melting zone as
narrow as possible, two water-cooled glass coolers were placed on either
side of the furnace. After the experiment the sample taken from the tube
was analyzed in the form of $Na_2B_4O_7$ in a mass spectrometer. Six
experiments were made altogether, using different rates (1.5 - 0.15 cm/hr),
tubes of different dimensions (l = 45 - 50 cm), and a varying number of
passages through the melting zone (1 - 25). The mass-spectrometric
Card 1/2

The viscosity of...

drawn in to pass through the capillary 10, 157 mm long and $\sim$0.2 mm i.d., = t). The viscosity was calculated from $\eta = A(T_1/T_2) t$, where A is an apparatus constant and T_1 and T_2 are room ($22^\circ C$) and capillary temperatures respectively. Standard experiments with CO_2 showed A to be 0.724, and η_{BF_3} was then measured analogously between 20 and $700^\circ C$.

Between 20 and $400^\circ C$, η is given by (15.9 ± 0.4) x

x $10^{-7} T^{0.821 \pm 0.004}$ g x cm^{-1} x sec^{-1}. Above $400^\circ C$, BF_3 attacked the quartz capillary, and anomalous results were obtained. There are 2 figures and 1 table.

ASSOCIATION: Kafedra fizicheskoy khimii (Department of
                 Physical Chemistry)

SUBMITTED: October 30, 1961

Card 2/2

40926

5.2410

AUTHORS: Panchenkov, G. M., Makarov, A. V., D'yachenko,
                  V. Ya., and Moiseyev, V. D.

TITLE: The viscosity of boron trifluoride

PERIODICAL: Moscow. Universitet. Vestnik. Seriya II,
                  Khimiya, no. 5, 1962, 11-13

TEXT: The viscosity of BF_3 (η_{BF_3}) was measured to determine

its dependence, as such data are necessary for thermodynamical
calculations associated with thermal diffusion columns involving
gas. The apparatus (Fig. 1) was made of Mo glass and quartz.
For a determination, container 2 (20 l) was filled with CO_2 at
atm. pressure, keeping taps 15 - 18 closed; Hg was then pumped
into 14 to just cover the top Pt lead (21, 23 and 24 closed).
Tap 24 was then opened, and the time of fall of Hg between the
upper two leads and 14 was measured (= time required by the CO_2

Card 1/3

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S/076/61/035/009/014/015
Separation of boron isotopes ...   B124/B1C⁹

There are 3 figures and 11 references: 9 Soviet and 2 non-Soviet. The two
references to English-language publications read as follows: T. I. Taylor,
W. Spindel, Proc. int. symposium isotope separation, Amsterdam, 1957,
p. 158; A. A. Palko, R. M. Healy, L. Landau, J. Chem. Phys., 28, 214, 1958.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V.
                Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: February 8, 1961

Fig. 2. Dependence of the equilibrium
separation coefficient of the column
on temperature. $BF_3 \cdot C_6H_5OCH_3$; glass
rings; feeding rate of the complex:
(1) 1 ml/min, (2) 2 ml/min, (3) 4 ml/min;
Nichrome coils; (4) 1 ml/min,
(5) 2 ml/min.
Legend: (a) S_{equ}
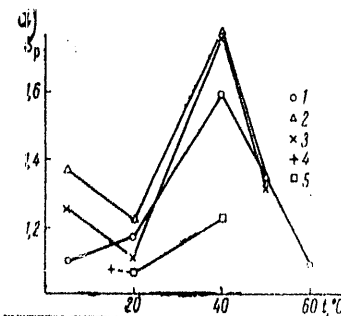
Card 3/4

Separation of boron isotopes ...

by 32 experiments, these data were treated using the least squares method, and the empirical equation $S - 1 = (S_{equ} - 1) \, t/(t_{1/2} + t)$ is used for correction; here S is the separation coefficient corresponding to the time t, S_{equ} the equilibrium value of this coefficient (for $t = \infty$), and $t_{1/2}$ the time necessary to attain the value $(S_{equ} - 1)/2$. This equation is much simpler than the equation derived by S. I. Babkov and N. M. Zhavoronkov (Ref. 6: Dokl. AN SSSR 106, 877 1956). The temperature dependence of S_{equ} for the anisole complex is highly complex (Fig. 2) which is probably mainly due to the isotopic effect of desorption. From the curve for the dependence of the separation coefficient S_{equ} on the feeding rate of the complex (Fig. 3), it is evident that the latter has only a small effect on the separation coefficient, except for cases when S_{equ} sharply decreases at low rates. Calculated optimum conditions are: column temperature somewhat higher than room temperature (about $40^\circ C$ for the anisole complex, and about $60^\circ C$ for the complex f BF_3 with chlorex), sufficiently high rate of feeding, and use of packing aterials having maximum specific surface.

Card 2/4

21. 4200

AUTHORS: Makarov, A. V., and Panchenkov, G. M.

TITLE: Separation of boron isotopes by the chemical exchange method. V. Dependence of the separation coefficient of the column on temperature and load

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 9, 1961, 2147-2150

TEXT: With regard to the importance of an appropriate choice of optimum conditions in the packed countercurrent column used to effect separation of boron isotopes by two systems $(BF_3 - BF_3 \cdot C_6H_5OCH_3$ and $BF_3 - BF_3 \cdot (C_2H_4Cl)_2O)$ with different packing materials (glass rings and coils made of Nichrome), particularly regarding temperature and load, the dependence of the separation coefficient of the column on temperature and feeding rate of the complex to a column 2 m high was studied. The boron samples recovered were analyzed with a mass spectrometer either in the form of BF_3 or of $Na_2B_4O_7$.

With respect to the considerable deviation of data on the dependence of the separation coefficient of the column on its time of operation established

Card 1/4

KUZNETSOVA, Ye.M.; MAKAROV, A.V.; PANCHENKOV, G.M.

Application of the multistage experiment formula for
devising the scheme of an ideal cascade. Zhur.fiz.khim.
35 no.9:2116-2119 '61.   (MIRA 14:10)
                        (Isotope separation)

27686

Separation of boron isotopes through ...
S/076/61/035/009/009/015
B106/B110

other, previously studied complexes, the lighter boron isotope is enriched in the liquid phase also in this exchange. The authors thank A. M. Kolchin and V. F. Malakhov for conducting the mass spectrometric analyses. There are 6 Soviet references. [Abstracter's note: Complete translation]

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova Khimicheskiy f-t (Moscow State University imeni M. V. Lomonosov, Chemical Division)

SUBMITTED: December 26, 1959

Card 3/3

27686
S/076/ 31/035/009/00;/015

Separation of boron isotopes through ...   B106/B110

The first results obtained for this system are described. The separation
of boron isotopes was carried out in an installation designed for the pre-
paration of the isotope B^{11}. Design and mode of operation of this instal-
lation had been described previously (Ref. 5). The only alteration con-
sisted in a more effective attachment made of 1X18I19T (1Kh18N9T) stainless
steel in the form of three-faced 2 by 2 mm spirals of).2 mm diameter wire
instead of the glass attachment used previously. Phenetole "p. a." without
additional purification was used. The experiments with the phenetole
complex showed that this complex foams at a slight temperature increase.
This greatly complicated the operation of the siphon through which the
complex entered the column. The column temperature during the experiment
was 30°C, that of the desorber ~170°C. The complex was admitted at a rate
of ~1 ml/min. After 14 hr of operation a gas sample for the isotope
analysis was taken from the absorber. Mass spectrometric analyses conducted
by A. M. Kolchin's method using borax ions as emitters (Ref. 6: A. M.
Kolchin, V. F. Malakhov i G. M. Panchenkov, Zh. fiz. khimii, 34, 2124,
1960) showed that the isotope ratio B^{11}/B^{10} in the specimen had the value
5.18 ± 0.13 (for the reference specimen the ratio was 4.09 ± 0.06). This
result corresponds to a total separation coefficient of 1.26. As in
Card 2/3

27686
S/076/ 1/035/009/009/015
B106/B110

_21.4200_

AUTHORS: Panchenkov, G. M., Makarov, A. V., and Pechalin, L. I.

TITLE: Separation of boron isotopes through chemical exchange.
IV. Complex compound of boron trifluoride with phenetole

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 9, 1961, 2110

TEXT: In previous papers (Ref. 1: G. M. Panchenkov, V. D. Moiseyev i
A. V. Makarov, Dokl. AN SSSR, 112, 659, 1957; Ref. 2: same authors, Zh.
fiz. khimii, 31, 1851, 1957; Ref. 3: G. M. Panchenkov, A. V. Makarov i
L. I. Pechalin, Vestn. Moskovsk. un-ta, seriya "Khimiya", No. 2, 3, 1960;
Ref. 4: same authors, Zh. fiz. khimii, 34, 2489, 1960; Ref. 5: G. M.
Panchenkov, A. V. Makarov i G. V. Romanov, Zh. fiz. khimii, 35, 1315, 1961),
the authors had reported on using isotope exchange between boron trifluoride
and its complexes with anisole and Chlorex for separating boron isotopes.
In one of these studies (Ref. 2), the possibility was mentioned of using
the isotope exchange between boron trifluoride and its complex with
phenetole for separating the boron isotopes:

$$B^{10}F_3 + B^{11}F_3 \cdot C_6H_5OC_2H_5 \rightleftharpoons B^{11}F_3 + B^{10}F_3 \cdot C_6H_5OC_2H_5$$

Card 1/3
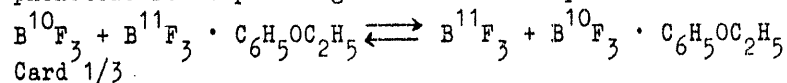
24656
S/076/61/035/006/008/013
B110/B220

Separation of boron...

A. A. Palko, Ind. Eng. Chem., 51, 121, 1959.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: September 28, 1959

Card 6/9

24656

S/076/61/035/006/008/013

B110/B220

Separation of boron...

With too high (A) or too low (B) temperatures in the column either complex formation occurs in the column and sampling is impossible (A) or a part of BF_3 escapes (B). Consequently, the temperature of the column has to be such that the complex of given composition is saturated. This was obtained in the following way: the temperature was slowly increased until BF_3 vapors left 25 and then reduced by 2-3°C. It was found that the red color of the anisole complex is due to products of resinification formed under the influence of atmospheric humidity. The complex is colorless in the column. The plant may serve for any complexes whatsoever, provided that the temperatures in desorber and pump system are changed. The production of $B^{10}F_3$ concentrate requires charging into the top part of the column. A. M. Kolchin and V. F. Malakhov are thanked for their assistance in the experiments. There are 3 figures, 1 table, and 15 references: 10 Soviet-bloc and 5 non-Soviet-bloc. The most recent references to English-language publications read as follows: S. V. Ribnicar, G. A. Bootsma, Bull. Inst. nuclear sci. "B. Kidrich" (Belgrade), 2. 91, 1959. A. L. Conn, I. E. Wofl, Ind. Eng. Chem., 50, 1231, 1958.

Card 5/9

24656

S/076/61/035/006/008/013
B110/B220

Separation of boron,...

column 41 was formed in the absorber. The column consisted of a tube
(length = 1.5-2.2 m, diameter = 18 mm) in the outer jacket of which water
coming from the TC-15 (TS-15) thermostat circulated. The inlet consisting
of Fenske glass rings etched with HF + NH_4F occupied a space of 3·3·0.6 mm.

The sampling system 27-39 was evacuated through 38 in a prevacuum. Then
26, 32, and 33 were cooled with liquid nitrogen by means of Dewar vessels,
31 and 35 closed. A certain quantity of gas tapped from the column
through 29, 25 being closed for this period, was frozen in 36 by means of
a Dewar vessel and further cooled in 32 and 33. 32 and 33 were unsoldered.
The analysis was made by a MC-3 (MS-3) mass spectroscope, the sample ob-
tained in test 3 was converted to borax and analyzed by means of MC-4
(MS-4) according to A. M. Kolchin. In the first test (I) (length of column
= 2.20 m, of absorber = 6 cm) a part of the BF_3 was not absorbed by anisole

and escaped, thus the low coefficient of separation 1.05. Also in the
second test (II) (column = 1.5 m; absorber = 50 cm) BF_3 escaped. Only in

the third test (III) (dimensions as for (II)) BF_3 was absorbed quantita-

tively. A coefficient of separation of 1.42 was attained after 32 hr.

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